CLAIMS

What is claimed is:

1. A polynucleotide adjuvant composition comprising a polyriboinosinic-polyribocytidylic acid (PIC), an antibiotic, and a positive ion, wherein the composition contains polynucleotide adjuvant composition molecules heterogeneous for molecular weight, wherein the molecular weight range is from about 66,000 to 1,200,000 Daltons or size from about 6.4 to 24.0 Svedbergs.

2. The adjuvant composition of claim 1, wherein the polynucleotide adjuvant composition has a molecular weight range from about 300,000 to 1,200,000 Daltons or molecular size range from about 12.8 to 24.0 Svedbergs

3. The adjuvant composition of claim 1, wherein the polynucleotide adjuvant composition has a molecular weight range from about 66,000 to 660,000 Daltons or molecular size range from about 6.4 to 18.3 Svedbergs.

4. The adjuvant composition of claim 1, wherein the polynucleotide adjuvant composition has a molecular weight range from about 300,000 to 660,000 Daltons or molecular size range from about 12.8 to 18.3 Svedbergs.

5. A polynucleotide adjuvant composition comprising a polyriboinosinic-polyribocytidylic acid (PIC), an antibiotic, and a positive ion, wherein the polynucleotide adjuvant composition has an average molecular weight equal to or greater than 150,000 Daltons or average molecular size equal to or greater than 9.3 Svedbergs.

6. The adjuvant composition of claim 5, wherein the polynucleotide adjuvant composition has an average molecular weight equal to or greater than 250,000 Daltons or average molecular size equal to or greater than 11.8 Svedbergs.

7. The adjuvant composition of claim 5, wherein the polynucleotide adjuvant composition has an average molecular weight equal to or greater than 350,000 Daltons or average molecular size equal to or greater than 15.3 Svedbergs.

8. The adjuvant composition of any of claims 1 to 7, wherein the antibiotic is kanamycin, neomycin, an anthracycline, butirosin sulfate, a gentamicin, hygromycin, amikacin, dibekacin, nebramycin, metrzamide, puromycin, streptomycin, or streptozocin.

9. The adjuvant composition of any of claims 1 to 8, wherein the positive ion is calcium, cadmium, lithium, magnesium, cerium, cesium, chromium, cobalt, deuterium, gallium, iodine, iron, or zinc; wherein the positive ion is the form of an inorganic salt or an organic complex.

10. The adjuvant composition of claim 1 to 9, wherein the source of positive ions is calcium chloride, calcium carbonate, calcium fluoride, calcium hydroxide, calcium phosphates, or calcium sulfate.

11. The adjuvant composition of claims 1 to 7, wherein the antibiotic is kanamycin sulfate and the positive ion is provided by calcium chloride.

12. A kit comprising the adjuvant composition of any of the claims 1 to 11 and an antigenic compound.

13. An immunogenic composition comprising the polynucleotide adjuvant composition of any of claims 1 to 12 and an antigen.

14. The immunogenic composition of claim 13, wherein the source of the antigen is a human, non-human animal, plant, bacterial, fungal, viral, a parasite, or a cancer.

15. The immunogenic composition of claim 14, wherein the antigen is a rabies antigen.

16. The immunogenic composition of claim 15, wherein the antigen is an inactivated purified rabies antigen.

17. The immunogenic composition of claim 16, wherein the presence of the hamster kidney cell inactivated purified rabies antigen is greater than 1 International Units.

18. The immunogenic composition of any of claim 16, wherein the ratio of the polynucleotide adjuvant composition to hamster kidney cell inactivated purified rabies antigen is greater than 3 to 1.

19. The immunogenic composition of any of claims 1 to 18 where the immunogenic composition comprises an adjuvant capable of eliciting an enhanced combined specific humoral and/or cell mediated immune response.

20. The adjuvant composition or immunogenic composition of any of claims 1 to 19, wherein the immunogenic composition, or the adjuvant composition contained in the immunogenic composition, is in a solid or liquid form or in solution or in suspension.

21. The adjuvant composition or immunogenic composition of any of claims 1 to 20, wherein the adjuvant composition and/or the immunogenic composition are freeze-dried.

22. A method for enhancing immune responses to an antigenic compound, comprising administering to a host a composition of any of claims 1 to 21.

23. The method of claim 22, wherein the immunogenic composition can be administered by one way selected from a group including parenteral injection, intramuscular injection, intraperitoneal injection, intravenous injection, subcutaneous injection, inhalation, rectal delivery, vaginal delivery, nasal delivery, oral delivery, opthamalical delivery, topical delivery, transdermal delivery or intradermal delivery.

24. The use of a polynucleotide adjuvant composition of any of the claims 1 to 23 for the preparation of a medicament for enhancing the immunogenic response of a host.

25. The method of any of claims 1 to 24, wherein the host is human.

26. The method of any of claims 1 to 25, wherein the host is an animal.